



Alagnak

Aniakchak

Katmai

Kenai Fjords

Lake Clark

Brown Bears

Importance

Brown bears serve important ecological roles as top predators; specifically, they influence population dynamics of other species and transfer nutrients from spawning salmon to the terrestrial system. Alagnak Wild River (ALAG), Aniakchak National Monument and Preserve (ANIA), KATM, and Lake Clark National Park and Preserve (LACL) support high numbers of brown bears. Densities along the coast of KATM are the highest reported in North America. Brown bears are also an economically important resource for wildlife viewing, sport hunting, and subsistence hunting.



Structured decision making efforts for brown bears make progress

In 2012, NPS initiated a project to develop structured decision making models for brown bear populations in Katmai National Park and Preserve (KATM) and Noatak National Preserve (NOAT). The goal of developing structured decision making models for these areas is to give managers quantitative tools to guide decisions about access to habitat areas and harvest of the species. The brown bear structured decision making group met three times in late 2012 and throughout 2013, resulting in a completed model

for both KATM and NOAT. During the development process, participants structured objectives, developed models, and then refined and parameterized them during workshops. Along with collaborators at the University of Georgia, the group continues to parameterize and refine the model. They expect the project to be finished in 2014, resulting in a presentation at the Wildlife Society annual meeting, two published manuscripts, and one annual report.



A brown bear den in Katmai as seen from the air. Pilot-observer teams surveyed a total of 490 km² in central KATM in 2012 and 2013 to test new methods for adequately monitoring bear den occupancy in SWAN parks. Photo: Tammy Wilson/NPS

Testing methods for monitoring brown bear den occupancy

In 2012 and 2013, the Southwest Alaska Network (SWAN) along with KATM and the Central Alaska Network (CAKN) worked together to test an alternative method of monitoring brown bear dens using observations of dens in a 3,000-km² area in central KATM. The survey consisted of a three-visit occupancy design where 40 grid cells (490 km² total) were surveyed by pilot-observer teams. Den monitoring was conducted at each grid cell between two and three times during bear emergence. Overall, the ability to detect dens, given that they were there, was about 34%. About 64% of the grid cells in the study area were suitable for bear dens. A rudimentary habitat model fit to the den site data shows that bears preferred sites with steeper slopes for denning. However, some dens were found in sites with low overall slope, so bears sometimes place dens on small habitat features, such as moraines, that are not reflected in the mean slope values of the larger site.

A benefit to using this method is the ability to fit a basic occupancy model with data collected from a single season. By contrast, a population estimate for bears takes several years to fit using line transects due to the amount of data required. In addition to ongoing efforts to test methods, in 2013 NPS was awarded \$136,399 through the USGS-National Park Monitoring programs to fund a postdoctoral researcher at Mississippi State University to produce a meta-analysis of available bear monitoring methods.

A sow and her cubs pose for the camera in LACL. NPS photo

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